

Claims

- [c1] A method of evaluating an integrated circuit manufacturing process, said method comprising:
determining the actual film profile of a film formed in said integrated circuit manufacturing process;
comparing said actual film profile with a desired film profile;
and
if said actual film profile does not match said desired film profile, adjusting said integrated circuit manufacturing process to make said actual film profile match said desired film profile.
- [c2] The method in claim 1, wherein said desired film profile comprises a range of acceptable film profiles.
- [c3] The method in claim 1, wherein said actual film profile and said desired film profile comprise profiles across cross-sections of said film.
- [c4] The method in claim 1, further comprising repeating said determining, comparing, and adjusting processes for different cross-sections of said film.
- [c5] The method in claim 1, further comprising determining said desired film profile by averaging previous formations of said film formed using the same integrated circuit manufacturing process.

- [c6] The method in claim 5, wherein said averaging process comprises a statistical analysis.
- [c7] The method in claim 1, wherein said actual film profile and said desired film profile are irregular.
- [c8] A method of evaluating an integrated circuit manufacturing process, said method comprising:
plotting multiple thickness measures taken at regular intervals along a line crossing a film formed in said integrated circuit manufacturing process to produce an actual film profile of said film;
comparing said actual film profile with a desired film profile;
and
if said actual film profile does not match said desired film profile, adjusting said integrated circuit manufacturing process to make said actual film profile match said desired film profile.
- [c9] The method in claim 8, wherein said desired film profile comprises a range of acceptable film profiles.
- [c10] The method in claim 8, wherein said actual film profile and said desired film profile comprise profiles across cross-sections of said film.
- [c11] The method in claim 8, further comprising repeating said determining, comparing, and adjusting processes for different cross-sections of said film.

- [c12] The method in claim 8, further comprising determining said desired film profile by averaging previous formations of said film formed using the same integrated circuit manufacturing process.
- [c13] The method in claim 12, wherein said averaging process comprises a statistical analysis.
- [c14] The method in claim 8, wherein said actual film profile and said desired film profile are irregular.
- [c15] A method of evaluating an integrated circuit manufacturing process, said method comprising:
recording multiple thickness measures taken at regular intervals along a plurality of lines crossing a plurality of different sample production runs of the same film formed in said integrated circuit manufacturing process;
plotting said thickness measures to produce a plurality of sample film profiles of said film;
averaging said sample film profiles in a statistical process to produce a desired film profile;
plotting multiple thickness measures taken at regular intervals along at least one line crossing an actual production film formed in said integrated circuit manufacturing process to produce an actual film profile of said film;
comparing said actual film profile with said desired film profile;
and

if said actual film profile does not match said desired film profile, adjusting said integrated circuit manufacturing process to make said actual film profile match said desired film profile.

[c16] The method in claim 15, wherein said desired film profile comprises a range of acceptable film profiles.

[c17] The method in claim 15, wherein said actual film profile and said desired film profile comprise profiles across cross-sections of said film.

[c18] The method in claim 15, further comprising repeating said comparing and adjusting processes for different cross-sections of said film. .

[c19] The method in claim 15, wherein said actual film profile and said desired film profile are irregular.